

***Ksr1* Cas9-CKO Strategy**

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Project Overview

Project Name

Ksr1

Project type

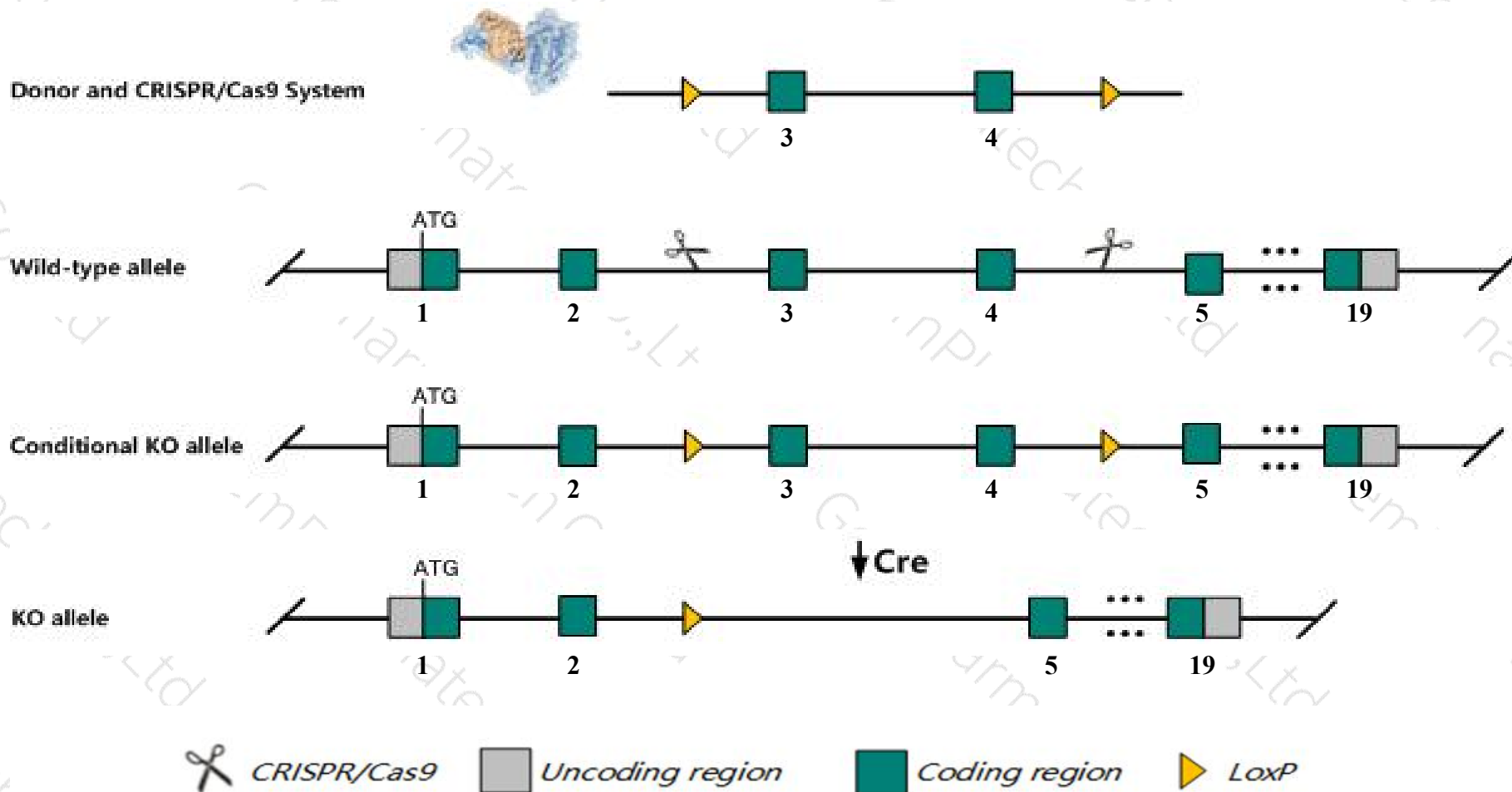
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ksr1* gene. The schematic diagram is as follows:



Technical routes

- The *Ksr1* gene has 7 transcripts. According to the structure of *Ksr1* gene, exon3-exon4 of *Ksr1-201* (ENSMUST00000018478.10) transcript is recommended as the knockout region. The region contains 572bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ksr1* gene. The brief process is as follows: CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Homozygous mutant mice exhibit disorganized hair follicles and a decreased susceptibility to papilloma formation.
- The *Ksr1* gene is located on the Chr11. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Ksr1 kinase suppressor of ras 1 [Mus musculus (house mouse)]

Gene ID: 16706, updated on 31-Jan-2019

Summary



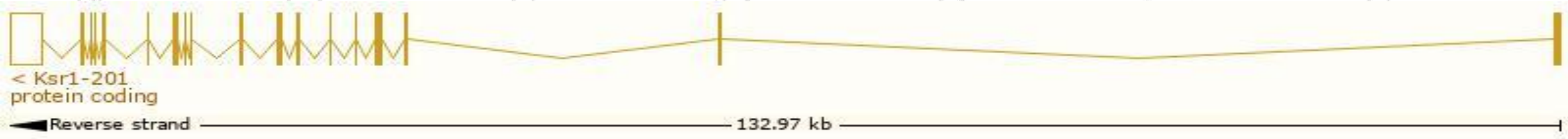
Official Symbol	Ksr1 provided by MGI
Official Full Name	kinase suppressor of ras 1 provided by MGI
Primary source	MGI:MGI:105051
See related	Ensembl:ENSMUSG00000018334
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW492498, B-KSR1, D11Bhm183e, D11Bhm184e, Ksr, RSU2, hb, mKSR1
Expression	Ubiquitous expression in large intestine adult (RPKM 15.8), small intestine adult (RPKM 14.1) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

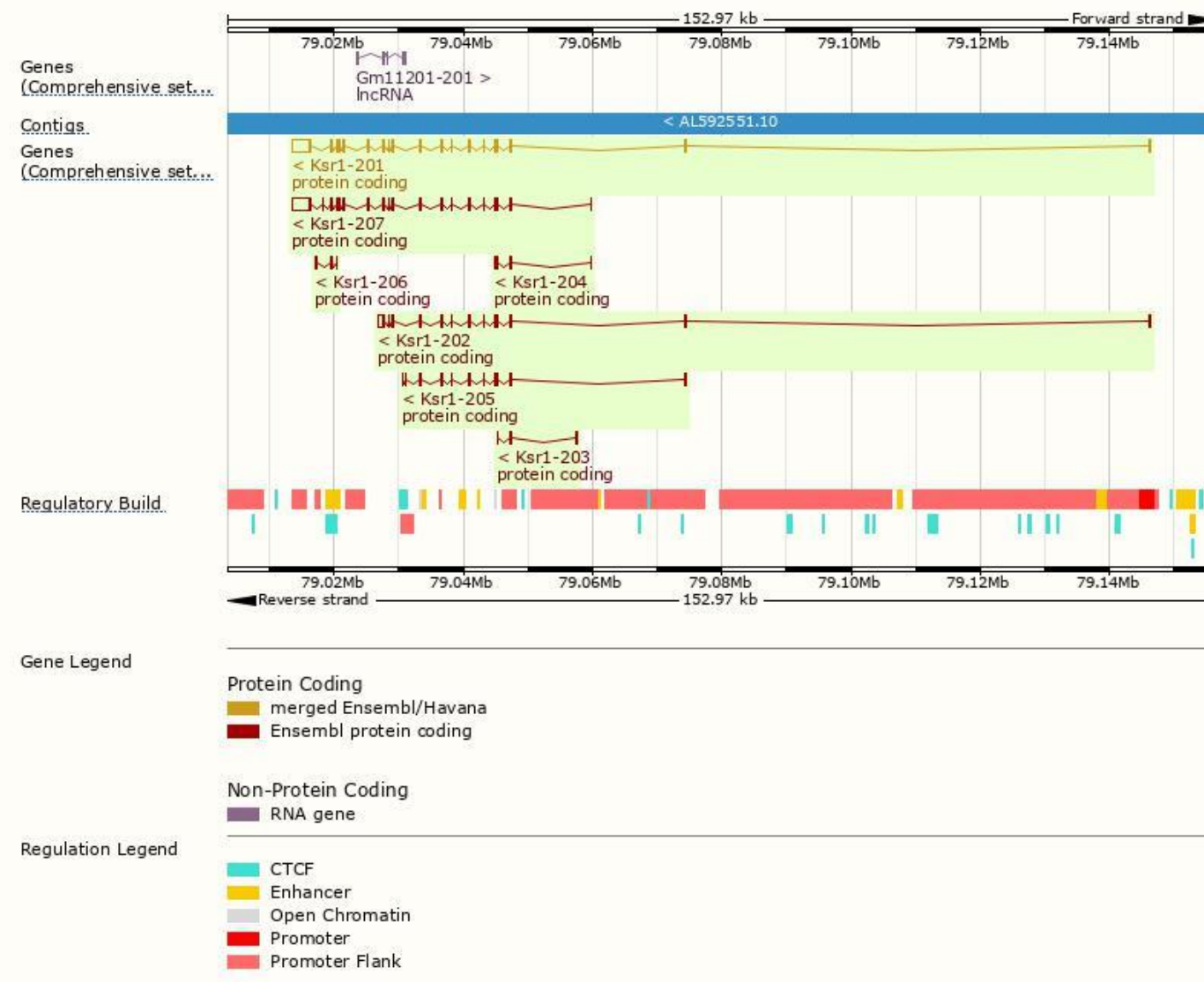
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ksr1-201	ENSMUST00000018478.10	5495	873aa	Protein coding	CCDS25117	Q61097	TSL:5 GENCODE basic APPRIS P1
Ksr1-207	ENSMUST00000226282.1	5260	818aa	Protein coding	-	A0A2I3BR95	GENCODE basic
Ksr1-202	ENSMUST00000108264.7	2748	637aa	Protein coding	-	Q5SXE4	TSL:5 GENCODE basic
Ksr1-205	ENSMUST00000208969.1	1298	432aa	Protein coding	-	A0A140LHS5	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Ksr1-204	ENSMUST00000141409.7	715	205aa	Protein coding	-	Q5SXE2	CDS 3' incomplete TSL:2
Ksr1-206	ENSMUST00000209031.1	491	65aa	Protein coding	-	A0A140LHP4	CDS 5' incomplete TSL:3
Ksr1-203	ENSMUST00000129463.1	432	80aa	Protein coding	-	Q5SXE1	CDS 3' incomplete TSL:2

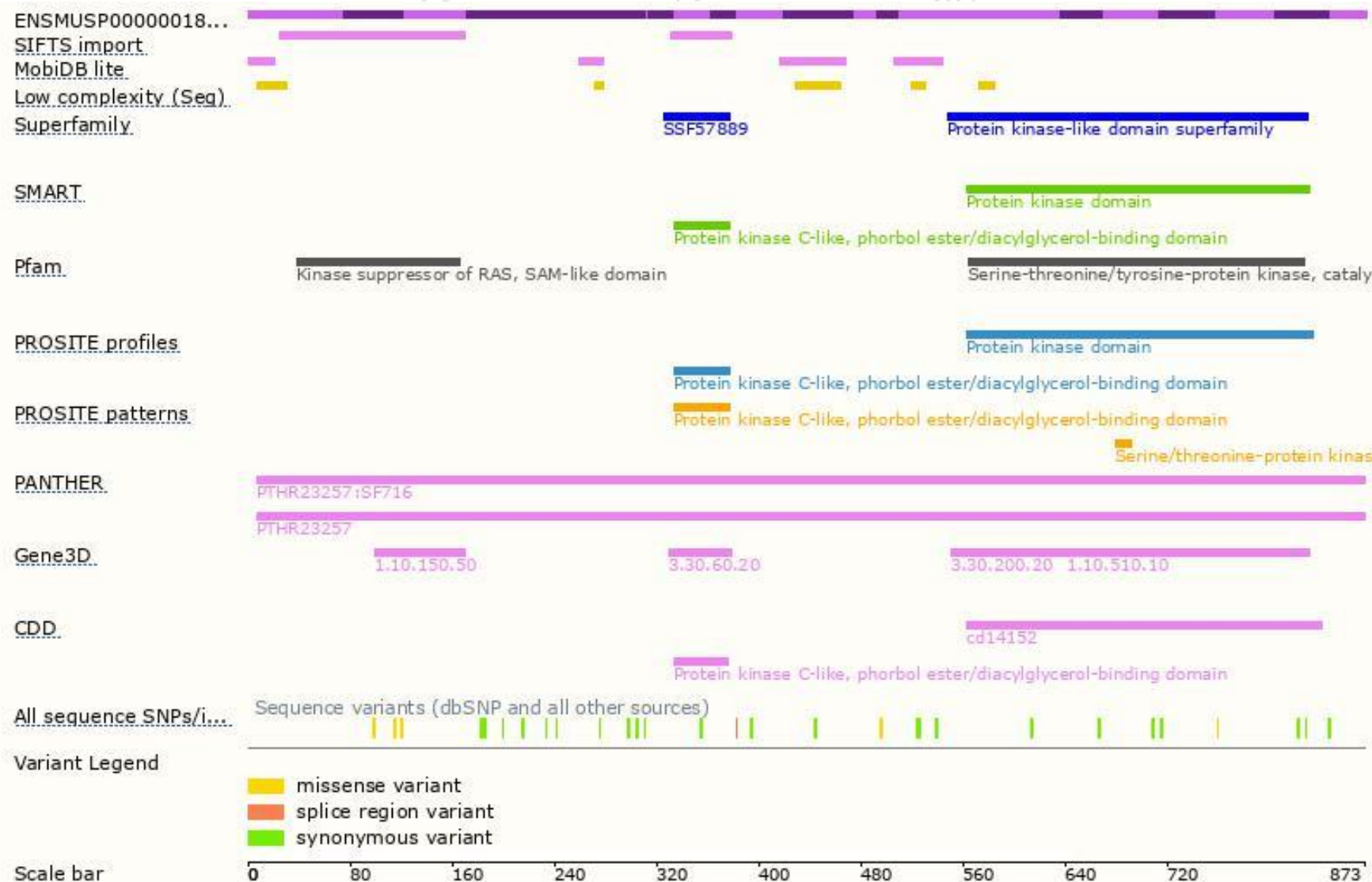
The strategy is based on the design of *Ksr1-201* transcript,The transcription is shown below



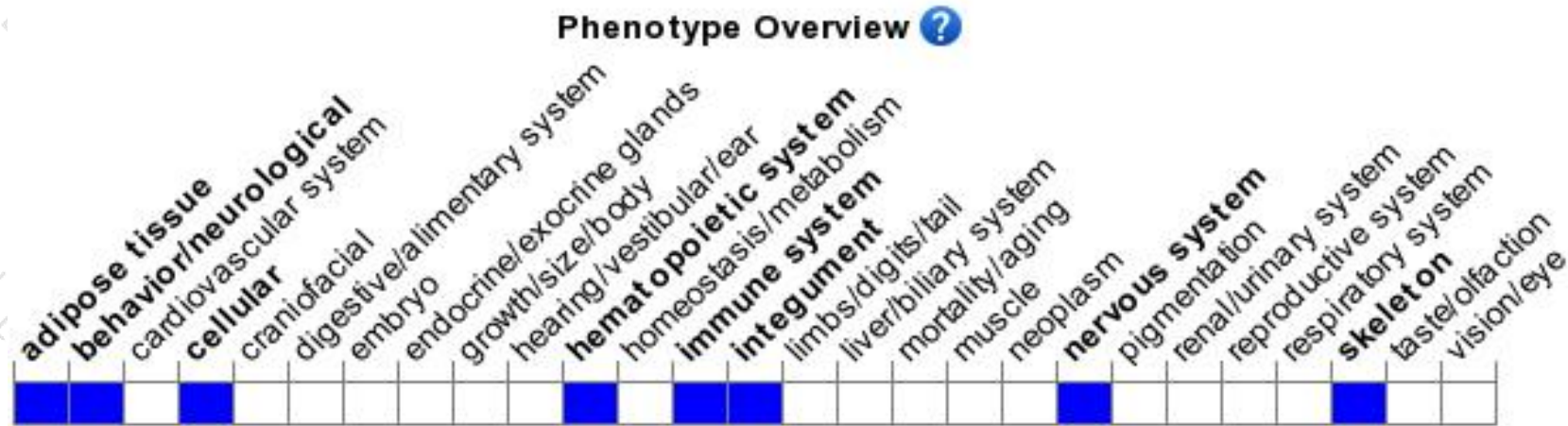
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, Homozygous mutant mice exhibit disorganized hair follicles and a decreased susceptibility to papilloma formation.

If you have any questions, you are welcome to inquire.

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